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ABSTRACT

This paper characterizes the school effects literature that has been conducted over the past 25 years with a focus on urban elementary and secondary schools. The features of the research studies reviewed are explored, including dependent and independent variables employed, sources of data, research methods used, and the number and direction of student outcomes measured. The overall review is followed by a study of 20 specific studies. In the overall review, results from four approaches are examined; input-output studies, case studies, outlier studies, and process-product studies. Results from the four approaches are surprisingly consistent. Evidence has accumulated that school does influence student outcomes, with the following usually cited: (1) strong instructional leadership; (2) high expectations for all students; (3) clear goals for students' academic and behavioral performance; (4) a safe and orderly school climate; (5) maximization of students' time-on-task; and (6) an academic emphasis. Twenty studies that represent the range of approaches to the study of school effects were then examined in an attempt to illustrate how future studies might be designed. Recommendations made from this analysis are suggested for future research that expands beyond a narrow focus on student achievement as measured by standardized testing. The 20 studies are listed in a bibliography. (Contains 11 tables and 49 references.) (SLD)

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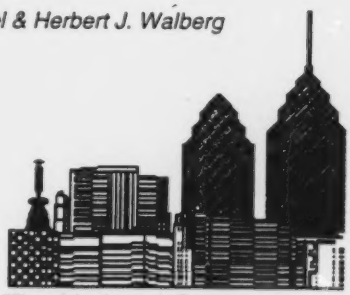

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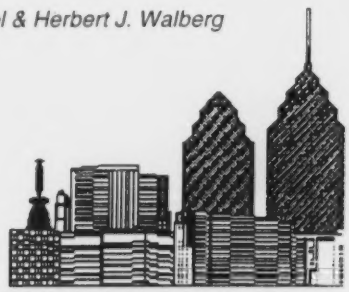

The National Center on
Education in the Inner Cities

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 # 95-12

Introduction

Over the past two decades, educational researchers have invested time and effort to determine how much schools influence students' cognitive, affective and behavioral outcomes. The effective schools research emerged out of the studies of social scientists, James Coleman and Christopher Jencks. Conclusions from their research indicated that levels of school achievement were not strongly related to school characteristics, but rather to student background variables. Challenging the conclusion that schools did not exert significant influence on student learning, teams of educators, psychologists, sociologists and economists were motivated to design research studies that illuminated the ways that schools impact the lives of their students.

Educational researchers are familiar with the chronology of the school effects research. The early research was launched in part by Edmonds (1979). He presented evidence that some schools in economically disadvantaged, minority neighborhoods achieved at levels beyond what would be expected given their resources and the number of students and families they serve in at-risk circumstances. Over time, a list of correlates of school effectiveness became commonplace among school practitioners, policymakers, and researchers. Among the correlates linked to unusually effective schools were:

- a productive school climate and culture (i.e., orderly environment, faculty cohesion and collegiality; and recognition of student academic accomplishment and good behavior)
- emphasis on acquisition of basic academic skills
- frequent assessment of student progress
- strong leadership by the school principal (i.e., attention to instructional concerns, personal involvement in classroom as well as schoolwide activities; and time and effort devoted to achieving school improvement)
- an active parent involvement program
- effective instructional strategies and implementation (i.e., specific instructional practices, articulation of curriculum between and within grades)
- setting high standards for all students (Levine & Lezotte, 1990)

Lists of correlates that were associated with effective schools became a staple of school improvement nationwide. The General Accounting Office (1989) reported that by the late 1980s, four out of every ten school districts had implemented programs based on the early findings of school effectiveness research.

Although this research impacted school practice more than most research, the findings were judged to be flawed by the educational research community. Several papers documenting the limitations of the early effective schools research appeared and created a need for state-of-the-art research on school effects. Scheerens (1992) identifies four studies that were designed and conducted with the intent of overcoming limitations in earlier research: Brookover, Beady, Flood, Schweitzer and Wisenbaker (1979); Mortimore, Sammons, Stoll, Lewis and Ecob (1988); Rutter, Maughan, Mortimore, Ouston and Smith (1979); and Teddlie and Stringfield (1993).

Over time the school effects research became more rigorous. Increasingly, studies included a theoretical orientation that was based on interdisciplinary understandings drawn from psychology, education, economics, sociology, demography and organizational systems and theory. The research methods that were applied expanded to include: survey methods, quasi-experimental designs, naturalistic case studies, and school and classroom observation. More sophisticated methods of multivariate and multi-level statistical processes, including multiple regression, factor analysis and hierarchical modeling began to be used. In addition, the samples of schools selected for inclusion in school effects studies became more representative of the contexts in which our nation's schools exist. Samples of urban, suburban and rural schools were drawn that represented the geographic, socioeconomic and ethnic backgrounds of students. Schools were targeted for study that served large populations of children at risk of school failure due to the adverse circumstances that characterize their communities, families, peer groups and schools.

The purpose of this paper is to characterize the school effects literature that has been conducted over the past 25 years which focused on urban elementary and secondary schools. This paper focuses on the features of the research studies—the independent and dependent variables employed, the sources of data used, the research methods employed and the number and direction of student outcomes measured. Implications are drawn for future school effects studies conducted in urban settings.

Approaches and Understandings from Key Studies of School Effects

To better understand the advances made in the study of school effects, results from four approaches are examined: input-output studies; case studies; outlier studies; and process-product studies. These four approaches are based upon earlier conceptualizations of the school effects literature put forth by Purkey and Smith (1983), Good and Brophy (1986) and Scheerens (1992). In describing each of these four approaches, we briefly describe the research designs used, identify key findings, and highlight methodological advances and limitations.

Input-Output Studies

The debate that surrounded the Equality of Educational Opportunity study (EEOS) (Coleman, Campbell, Hobson, McPartland, Mood, Weinfield and York, 1966) was the impetus for much of the school effects research that followed. The EEOS study was conceptualized as a production function study akin to those conducted in economics. Its purpose was to establish whether inequalities existed in educational opportunities, based on students' race, religion or other background characteristics. The EEOS study was designed around four constellations of variables: student's family background; student characteristics; peer group characteristics and teacher and school characteristics. These variables were classified as input and output variables. The schools were characterized by their students' background characteristics, their tangible resources (e.g., dollars, property, faculty experience) and the achievement scores their students obtained. The input variables included student, family and peer characteristics, and teacher and school characteristics. The most important output variable was student achievement. The EEOS study was designed to identify those variables that account for differences in achievement tests among schools. Results of the EEOS study indicated that schools had a limited influence on students' achievement and that students' families, peers and nearby communities had a substantial influence on students' achievement and success in adulthood.

The EEOS study findings were further confirmed by the results of Jencks, Smith, Ackland, Bane, Cohen, Ginter, Heyns and Michelson (1972). This team of researchers used a production function model and, like Coleman et al, (1966), demonstrated that achievement differences among students were not greatly influenced by the schools they attended. The Coleman et al. (1966) and Jencks et al. (1972) studies were among the first input/output studies of school effects. The research design and methods used were scrutinized and critiqued as the study of school effects advanced.

Most of the early input-output studies had an abundance of demographic and economic variables. Few, if any, classroom process variables were included. Typically, the independent variables used in the statistical analyses were operationalizations of tangible characteristics of the schools and school districts (i.e., per pupil expenditures, median teacher salary and number of books in the library). Many of the variables that characterized the school, the faculty and the classroom were measured in dollars and cents. The dependent variables that received the most attention were basic skills achievement test scores, courses taken and, occasionally, grades received in coursework. Limited attention was paid to student attitudes, values, beliefs and behavior. The most typical behavioral measure used was the school's average daily attendance rate. The data collected in these studies came primarily from surveys and archived documents. In summary, many input-output studies involved large-scale data collections and focused on the influence of social class, ethnic background and student intelligence on learning outcomes–especially achievement test scores.

Case Studies

Case studies have a place in the school effects research. Purkey and Smith (1983), in their seminal review of school effects research gathered findings from eight case studies (Brookover, et al. 1979; Brookover and Lezotte, 1979; California Department of Education, 1980; Glenn, 1981; Levine and Stark, 1981; Rutter et al., 1979; Venezgy and Winfield, 1979; and Weber, 1971). The quality of these case studies was uneven—some were very detailed and systematic, whereas others were more

impressionistic. All of the case studies reviewed by Purkey and Smith identified a myriad of variables, features or characteristics of the schools they were studying. In spite of the many specific features identified, a handful of common features appeared among effective urban elementary schools, including: (1) strong leadership from the school principal; (2) high standards and expectations of success for all students; (3) clear goals for students' academic and behavioral performance; (4) an academic emphasis; and (5) an active and systematic program of professional development. Other features of effective schools that appeared less frequently were: (1) an orderly and cooperative school climate; (2) frequent assessments of student progress; (3) maximization of student time-on-task; (4) use of reinforcement and praise, and (5) streaming of students by ability. Purkey and Smith caution that results from case studies are based on small samples that do not represent the variety of contexts that characterize our nation's schools.

Outlier Studies

Relying upon regression analysis, this approach to school effects research identifies unusually effective (positive outliers) and ineffective schools (negative outliers) and then further studies the schools to determine what accounts for their levels of exceptional performance. Among the more familiar outlier studies were three studies conducted for the New York State Department of Education (1974a, 1974b, 1976), Austin's (1978) study conducted for the Maryland State Department of Education and studies by Lezotte, Edmonds and Ratner (1974) and Brookover and Schneider (1975). Summaries of findings from these studies point to the crucial role of a safe and orderly school, high teacher expectations for all students, and, to a lesser degree, the principal as an instructional leader who establishes a school vision and culture. Although these three features of effective schools have appeared in a number of outlier studies, large numbers of features or correlates of school effectiveness were identified. The abundance of correlates should caution researchers and practitioners against promoting too limited a list of characteristics of effective schools. In selecting schools to be used in outlier studies, the following

criteria were used to guarantee some degree of representativeness: degree of urbanicity (rural, suburban and urban); geographical regions; degree of minority, majority and mixed populations; and school district representation. A limitation of outlier studies is that their results are based on correlational techniques and imputing causality to the correlates is inappropriate. An additional limitation is that outlier studies are generally conducted over a single year and do not have the advantages of longitudinal data analyses.

Process-Product Studies

Four of the most familiar and scrutinized process-product studies of effective schooling are those conducted by Brookover et al. (1979), Rutter et al. (1979), Mortimore et al. (1988) and most recently, the Louisiana School Effectiveness Studies (Teddlie and Stringfield, 1993). These studies examined schoolwide and classroom procedures and routines to better understand the processes that impact student and school performance. These four studies were eclectic in their use of research methods. For example, most of the studies used questionnaires and self-report measures which were administered to students, teachers and school staff, and occasionally parents. In addition, many hours of classroom observations were conducted. Subsequently, the data collected using questionnaires, self-reports and classroom observations were correlated and interpreted using the language and constructs associated with process-product research. These studies also employed some of the methods used in outlier studies and naturalistic case studies. The Brookover et al. (1979), Rutter et al. (1979), Mortimore et al. (1988) and Teddlie and Stringfield (1993) studies are briefly described below.

Brookover et al. (1979). In the Brookover et al. (1979) study, an effort was made to expand the variables and methods used in the large scale, input-output studies. Among the data collected by Brookover and his colleagues were: student background data; achievement test scores; self-concept measures; and attitudes and information from the instructional and administrative school staff. Among the information collected from school staff were details of classroom practice and procedure such as: the

nature and degree of parent involvement, the planning of instruction, grouping practices, amount and nature of student interactions, time allocated by teachers to academic, social and management tasks and level of satisfaction with the school organization and structure.

Based on results from this research, the Brookover research team helped establish the construct of a school culture comprised of the norms, expectations and beliefs that school staff and students share. Brookover et al. (1979) also expanded the types of output or dependent variables employed in school effects research to include more affective and behavioral outcomes. Correlational analyses were conducted among the variables collected at the 68 schools that comprised the Brookover sample.

A detailed investigation was conducted of four schools. These investigations included classroom observations and interviews. The four schools were classified as predominantly white vs. African-American and low SES vs. high SES. Results from these four intensive investigations, documented the importance of: (1) the amount of time devoted to instruction; (2) the number of children judged to be "write-offs"—or destined to failure; (3) the importance of high standards for all students: (4) the value of reinforcement and praise on students' learning outcomes; (5) the grouping of students with the intention of advancing them to a more expert group as soon as possible; (6) the use of cooperative team games to encourage student motivation and perseverance; (7) a strong instructional role for the principal; and (8) an expressed commitment by school staff to the academic achievement and well-being of students.

The correlational analyses, case studies and classroom observations provided evidence that the use of school input characteristics alone (i.e., student SES, demographic indicators, and economic indicators) will not account for as much variance in student outcomes (academic achievement, self-concept, etc.), as when school process variables (i.e., time-on-task; use of advance organizers, etc.) are included in the statistical analyses. Schools with comparable financial resources and student populations can have dramatically different school and classroom climates that influence their students' cognitive, affective and behavioral outcomes.

Rutter et al. (1979). Rutter et al.'s (1979) study of effective United Kingdom schools, entitled *Fifteen Thousand Hours,* focused on qualities of urban, secondary schools that were related to achievement. The twelve schools used in this study differed dramatically in terms of the characteristics of students enrolled. Schools with the best students (measured in terms of parental occupations, verbal ability and delinquency) did not always produce the best outcomes.

A particular theory of schooling was not advanced in the Rutter et al. study, rather seven broad categories of school variables were hypothesized as influences on student outcomes: academic orientation; teaching strategies; use of rewards and punishments; classroom climate; pupil involvement in school activities; continuity of teaching staff; and stability and organization of students' peer groups. Data were collected using interviews, student self-reports, archived records and classroom observations. Classroom observations were conducted for one week in third year classes in each of 12 urban, secondary schools. Rutter et al. (1979) used five measures of student success: student attendance, indicators of student behavior in school, academic achievement, employment success and delinquency. Unlike many earlier studies of school effects, the Rutter study used multiple outcome measures from each of the cognitive, affective and behavioral domains. Results from the Rutter study confirm Brookover et al.'s (1979) finding that student outcomes are a product of more than student characteristics. School effects are related to school culture, classroom processes and teacher behaviors.

Among the more influential school and classroom practices identified were: use of regularly assigned homework; high standards for all students; and the proportion of school time devoted to instruction. Rutter et al. (1979) concluded that although the schools in their sample differed markedly in terms of their students' prior achievement levels and behavioral problems, these differences did not account for students' subsequent behavior and achievement. Schools do influence student outcomes. The levels of student outcomes achieved do remain fairly stable over four to five years. Schools with students who exhibited better than average achievement also exhibited better than average behavior.

The differences in student outcomes were not strongly linked to tangible characteristics of the school, such as the age of the building or the number of makeshift classrooms. School culture or ethos, which is produced by the cumulative effect of several co-occurring processes, procedures and policies, has a much more pronounced effect than any single process variable alone. The direction of influence from school culture to student achievement and behavior may seem intuitively obvious, but, in terms of empirical evidence, the directionality of effects is conjecture.

Mortimore et al. (1988). Using a sample of 50 United Kingdom schools located in London, Mortimore and his colleagues conducted a seminal study of elementary school effectiveness. Like the Brookover and Rutter research teams, Mortimore and his colleagues designed a state-of-the art study to determine if schools differed in effectiveness when differences in student intake characteristics were statistically controlled. The study was also designed to identify differential effects of school procedures and processes on various student populations. The Mortimore study employed a longitudinal research design and data was collected on cognitive and non-cognitive learning outcomes. Direct observations were made at the school and classroom level. In addition, multi-level data analytic techniques were used. Mortimore et al. (1988) reported their central conclusion as follows:

> We have shown that school membership made a very important contribution to the explanation of variations in pupils' attainment and progress over three years in reading, writing and mathematics, to attainment in oracy and practical mathematics and also to the development of attitudes, self-concept and behavior in schools (p. 204).

Mortimore et al. (1988) further describe school effects as follows:

> In general, we found that the effects of school membership on non-cognitive outcomes were not highly related to those on cognitive areas. It seems that the two dimensions were largely independent of each other. Nonetheless, amongst the sample of schools included in the study, there were striking differences in effectiveness. Some schools had positive effects on their pupils' progress and development in several areas. From these results it can be seen that , for the pupil, the particular school she or he joins at age seven can have a highly significant impact upon futur progress and development. The effects of junior schooling [elementary] are likely to be carried forward with the child at secondary transfer and may have a long-term influence on later educational success and employment prospects. (p. 204)

The 12 factors that explained differences among effective and ineffective schools were: (1) purposeful instructional leadership by the school principal; (2) active involvement of the vice-principal in school activities (delegation of responsibilities from the principal to the vice-principal was helpful); (3) involvement of teachers in curriculum planning and policy; (4) continuity of teachers so that children have the same teachers from year-to-year and school procedures, guidelines and routines are stable; (5) clearly organized classroom activities which support students working independently; (6) the maintenance of high academic standards and intellectually demanding content for all students; (7) a work-centered environment; (8) sharply focused lessons; (9) frequent direct communication among children and teaching staff; (10) careful record keeping of student progress; (11) parental involvement in classrooms, schoolwide activities, curriculum planning and policy formation; and (12) a positive climate characterized by giving frequent positive feedback to students. These results differ from Rutter et al. (1979) and Brookover et al. (1979) and Edmonds (1973), in that they do not emphasize basic skills; otherwise, many of these findings conform to earlier enumerations of characteristics of effective schools.

The Louisiana School Effectiveness Studies (LSES). One of the most comprehensive studies of effective schooling was reported by Teddlie and Stringfield (1993). This 10-year study with four phases involved a process-product study, a micro-level longitudinal study, and case studies on three pairs of schools (urban, suburban, and rural). In the process-product study, the following variables and research methods were employed: student SES; criterion-referenced test data measuring basic skills; norm-referenced test data measuring basic skills; a school climate questionnaire completed by students, teachers and principals; additional psycho-social indicators; faculty SES; and school structure characteristics. Hierarchical linear modeling (HLM) techniques were used to analyze the data. Using HLM, Teddlie and Stringfield demonstrated that Rutter et al. (1979) had underpredicted the impact of schools on student learning. Describing their conclusions, Teddlie and Stringfield (1993) assert, "In LSES-I I [the process-product phase of the LSES] measures of potentially alterable school-related

behaviors on the parts of principals, teachers, students and parents were better predictors of student achievement than were second-order factors containing SES and racial data" (p. 25).

Teddlie and Stringfield (1993) report the results of an ex post facto, criterion-group study that used multivariate analysis of variance to test differences among schools classified according to their effectiveness status and student SES levels. (Parent SES and race were used to classify schools as middle or low SES.) Using achievement data, regression analyses were used to predict how well schools would be expected to perform based on the characteristics of the student populations they served. Six categories of schools were identified: more effective, typical and less effective for each of the middle and low SES schools. Results of the multivariate analyses of variance identified four school characteristics that were linked to effective schools regardless of SES level: a clear, academic focus; an orderly environment; high time-on-task; and monitoring of student progress. There was also evidence that schools in different contexts required different strategies to be effective. Six areas where differential strategies were identified are: (1) the role of the principal; (2) patterns of rewards for students; (3) curricular offerings; (4) setting expectations for the students; (5) degree and type of community involvement; and (6) the recruitment and hiring of staff with different levels of experience and idealism. These strategies have implications for school improvement plans and for the education of students in urban settings.

Results of the case studies of urban, suburban, and rural schools further documented differences in school and classroom practice within these different contexts. The case studies of urban schools revealed that, in terms of community involvement and district offices, urban schools may have adequate resources but have poor delivery systems. Oftentimes, there may be little community involvement. Some urban neighborhoods undergo rapid transitions and the schools may wish to buffer themselves form community influences. Instructional leadership is a critical resource in urban schools. The principal must exert strong leadership in terms of the school culture and in establishing a discipline policy that maintains

a safe and orderly school climate. In urban schools, moderate participation from the district office is helpful; however, more involvement from the school faculty was found to more important.

The professional atmosphere that exists in many urban schools is one of isolation due to departmentalization. The teacher turnover rate is high, and adequate recruitment of urban teaching staff depends on the school's districtwide reputation. Ample opportunities for teachers' professional development do exist. Faculty expectations for student performance are crucially important. Frequently expectations for urban students' performance are mixed. High expectations for short-term learning goals are important, but expectations for long-term goals need to be developed more slowly. The curriculum in urban schools varies--some urban schools are oriented toward basic skills, whereas others have a wider range of curriculum offerings, including moderate to high levels of technology.

For LSES phases III and IV, pairs of effective and ineffective schools were matched based on demographic characteristics. Student data were collected at two points in time. The objective of this phase of the research was to determine whether 16 effective and ineffective schools retained their effectiveness status or changed over eight years. There was evidence over the short term (three years) of persistence of school effects, whereas over the long term (eight years), half of the schools' effectiveness status changed. This change in status was sometimes related to the school principal being replaced, which could greatly alter the types of teaching strategies being used, as well as the school culture.

Summary

Results from the four approaches to the study of school effects are surprisingly consistent. Evidence has accumulated that school does influence student outcomes. The list of specific school features and practices that matter most vary from study to study, but certain characteristics of effective schools have appeared so frequently, that they can be regarded as key correlates of effective schools. Those features that have appeared regularly are: a strong principal who acts as an instructional leader;

setting high expectations for all students in the school; the use of instructional strategies that are part of direct instruction; a safe and orderly school climate; maximization of learning time; and an academic emphasis. Although the short list of correlates appeared as crucial in many studies, many other features did present themselves in various school contexts. In addition, even the short list of correlates must be modified given the school context. For example, qualities of principals in especially effective urban schools are not the same as qualities of successful principals in rural schools. Thus, findings appear to be contextually sensitive. It also appears that schools need to constantly refresh themselves in order to preserve their status as effective learning environments; because a school is effective at a point in time does not ensure that it will retain its status over 5 or 10 years. The continuity of school administrative and teaching staff helps ensure the success of students.

The research methods and data sources described in the prior sections of this paper point to several attributes of state-of-the-art research on school effects. The research needs a theoretical base that will eliminate the "fishing expedition" mentality. Attention must be paid to alterable variables to guarantee that practical implications can be drawn. Multiple methods and sources of data need to be collected to help triangulate results. Several types of student outcome measures must be employed so that the impact of school characteristics on students' affective and behavioral outcomes can be assessed along with the impact on cognitive outcomes. Longitudinal research designs ensure that student progress can be measured over time (learning), as opposed to a static measure of achievement measured at a single point in time. The unit of analysis that is used in the data analysis is crucially important to the interpretation of results— care must be taken to determine whether results should be interpreted at the level of the individual student, the classroom, the school or the district. Statistical advancements such as hierarchical linear modeling allow for more accurate estimates of the influence of these characteristics and features. In the next section of the paper we examine 20 studies that represent the range of

approaches to the study of school effects. Key features of the research design and methods are identified and recommendations are drawn for further research on urban schools.

Method

Twenty studies of school effects were selected for inclusion in the current review. These studies were conducted over the past 26 years since the publication of the Coleman et al. (1966) EEOS study. The criteria for selection of studies, the search strategy and the coding of study results are described below.

Corpus of Studies Reviewed

Table 1 presents the bibliographic citations for the 20 studies that were included in the current review. All of the studies included are primary research studies conducted between 1967 and 1993 in the United States or the United Kingdom.

Insert Table 1 about here

Criteria Used to Select Studies. The twenty studies selected were identified using the following four criteria: (1) the unit of analysis for the study was the school; (2) a primary objective of the study was to identify features of schools that foster students' or teachers' performance; (3) the sample of schools involved must include urban elementary or secondary schools serving populations of students at risk of school failure; and (4) the study must employ several types of student outcomes, including measures of cognitive, affective, and behavioral outcomes. In general, the studies selected met the first three criteria, but the fourth criteria was more difficult to attain. Thus, some studies were selected that did not include measures of all three types of outcomes. Early studies of school effects, especially those conducted in conjunction with Chapter 1 program improvement initiatives, used only achievement test

scores as a dependent measure. In general, we chose not to include studies with a narrow focus equating school effectiveness with high performance on achievement test scores alone. It was our intent to identify studies that included evidence of two or three types of student outcomes.

The corpus of 20 studies that were identified is not put forth as an exhaustive review of all the urban school effects literature. Rather, it is a selective sample of studies that exhibit research methods, data sources, and statistical analyses that can illuminate how future studies might be designed.

Search Strategy Employed. Six sources of information were searched, including; (1) the ERIC electronic database; (2) the PsycINFO electronic database; (3) the *Annual Review of Psychology* (Stone, Farnsworth, Mussen, and Rosenweig, 1950-1988); (4) the *Annual Review of Sociology* (Inkeles, Turner, and Scott, 1975-1988); (5) the *Handbook of Research on Teaching, 3rd ed.* (Wittrock, 1986); and (6) reference lists in other source documents. Results of these searches identified approximately 50 primary studies of which 20 were selected.

Coding of Studies

For each study, the researcher coded: (1) the variables employed; (2) the data sources employed; (3) the research methods used; and (4) the type, number, and direction of student outcomes reported. The codes used in each of these classifications are described below.

Variables Coded. Several hundred different variables were employed in the 20 research studies coded. Six broad types of variables were identified. As the variables used in each study were identified, they were coded into one of these six categories. The six categories are listed below (categories of variables are identified I-VI and subcategories are specified within the parentheses).

- I. School-level Organization and Policy Variables
  (School Governance; Support from District Office; School-level Characteristics)
- II. School Administrator Performance Variables
  (General Characteristics; Perceived Roles and Responsibilities; Career Development)
- III. Classroom Variables
  (General Teacher Characteristics; Teacher Goals; Teacher Planning; Classroom Climate; Classroom Management; Teacher Career Development; Use of Assessments and Record

Keeping of Student Progress; Student and Teacher Interactions; Teacher Satisfaction, Attitudes and Beliefs)

- IV. Curriculum Variables
  (Organization of Curriculum Content; Grouping Practices; Student-Directed Work; Delivery of Curriculum-Resources Used; Professional Standards and Frameworks)
- V. Student Variables
  (Characteristics of Sample; Cognitive and Affective Performance at Entry to School; Cognitive Attainment During School; Behavioral Indicators During School; Student Attitude toward School; Self-Concept)
- VI. Input-Output Variables
  (Facilities and Resources; School Staff Characteristics; Demographic Characteristics of Students and Families; Demographic Characteristics of Community)

Data Sources Coded. For each of the studies, the sources of data that were used to generate information were also coded. The six potential data sources that were coded were:

- Students
- Teachers
- School Administrators
- Parents
- Peers
- Community Members

Research Methods Coded. Some of the twenty studies employed several different research methods as part of their overall research design. Ten research methodologies were identified and coded for each study.

- Interviews
- Questionnaires/Survey Methodology/Rating Scales
- Classroom Observations
- Ability and Aptitude Tests
- Achievement Tests (standardized commercial tests, state or district tests, classroom tests)
- Performance Tests
- Student Self-Reports
- Naturalistic Case Studies
- Sociometric Instruments
- Document Review

Type, Number, and Direction of Outcomes Coded. For each of the twenty studies, we designated whether the study included measures of:

- cognitive outcomes
- affective outcomes
- behavioral outcomes

In addition, we classified each outcome by the direction of the finding: positive, no difference, or negative.

Data Analysis

For each of the types of information that was coded (variables; data sources; research methods; and type, number, and direction of outcomes), the researchers calculated the frequency and percentage of occurrence in each of the 20 studies and for the total corpus of studies.

Results

Results are presented describing the variables, data sources, research methods, and types of outcomes reported in the 20 studies reviewed.

Variables

There were 570 variables identified in the 20 studies. The variables were classified into the six categories. The number and percentage of variables within each of the categories are presented below.

Category of Variables	% and Number of Total Variables
School Organization and Policy	16% (N=90)
Performance of School Administrators	6% (N=36)
Classrooms	24% (N=135)
Curriculum	4% (N=25)
Student	26% (N=147)
Input/Output	24% (N=137)

The variables that researchers employ when they design a research study reflect the conceptualization of the constructs, processes and outcomes needed to study a particular phenomena. The types of variables

that have dominated the school effects literature are student-level characteristics and outcomes, input-output, and classroom-level.

The results presented above document the importance that has been placed on student characteristics (cognitive, affective and behavioral) at the point of entry into school and the cognitive attainments acquired during the students' schooling. From the early years of school effects research, researchers have recognized that student outcomes were the sine qua non that guaranteed the value of the research. In early school effects studies, students' cognitive performance was viewed as the most important outcome. As the research matured, the range of student characteristics and outcomes expanded.

Input-output variables demonstrate the conceptualization of education from an economic perspective. This approach regards schools as having resources (teachers, materials, dollars, etc.) which are applied to educating students with particular characteristics (family background, ability, prior achievement, aspirations). Among the outputs of schooling are student learning, potential employees and productive citizens. This conceptualization of schools had some of its antecedents in the work of Joseph Mayer Rice in the early 1900s (Rice, 1913). Rice proposed scientific management of schools as a palliative to the problems of the public schools. He advocated the use of clearly defined goals, standards, and carefully measured results. This concern with scientific rigor, efficiency and productivity is represented in models of schooling that are based upon economic production functions and make use of input-output variables. The early school effects literature was dominated by an economic model of schooling. Currently, variables operationalized in terms of dollars and cents and other economic indices, while still employed in school effects studies, are regarded as only one of the many types of variables needed to properly estimate school effects.

Classroom variables have been widely used in school effects studies. Classroom variables include specific teacher behaviors, classroom management techniques, classroom climate and teacher characteristics, beliefs and norms. In the Coleman EEOS study limited attention was paid to classroom

process and practice. With the publication of Brookover et al., (1979), Rutter et al. (1979), and Purkey and Smith (1983), classroom process and school culture were identified as critical features of the school that could influence school outcomes. In addition, the research of Walberg and his colleagues (Haertel, Walberg and Haertel, 1981; Fraser, Walberg, Welch and Hattie, 1987) on classroom climate related dimensions of classroom affect to student achievement and other outcomes. Thus, researchers of school effects expanded the categories of variables employed to include more classroom process and climate measures.

In the data presented above, school organization and policy variables were also included in a number of studies. This category of variables, like the category of classroom variables, also received more attention after studies appeared emphasizing school culture and climate. The categories of variables appearing least frequently were those representing curriculum and the performance of school administrators. The variables in these two categories have been more widely used in studies of school effects conducted in the United Kingdom. In the United States, the practices, beliefs, and attitudes of school administrators and teachers are increasingly viewed as part of systemic school reform efforts, but to date, these types of variables have not been carefully explored in the school effects literature. The types of curriculum variables employed in the past have generally focused on specific programs, teaching behaviors and the mechanisms of curriculum delivery (i.e., computer-assisted instruction, etc.) rather than on curriculum design, organization, and continuity. More recently researchers are identifying curriculum organization, continuity, and transitions as important to student learning.

Below brief descriptions are provided of the patterns of variable usage in each of the six categories. (All of the variables described were identified in the articles cited in Table 1.)

School Organization and Policy Variables. Of the 90 school organization and policy variables identified in the studies, the most commonly employed were those that measured school and class size (See Table 2). Policy variables, while receiving much attention among educational reformers, have not

been widely used in studies of school effects. Cohen and Spillane (1992) proposed that the presence of a policy alone is not likely to change school practice. Cohen cautions that a policy, such as a state

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Insert Table 2 about here

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curriculum framework, provides instructional guidance and is intended to influence practice. To be effective, however, instructional guidance must be consistently applied and may require the use of assessments, curriculum, programs guidelines, evaluation and technical assistance. Most of the studies that we examined did not determine the influence of school policies on schools. There was little effort made to identify the presence of policies, let alone the use of additional interventions that make the instructional guidance consistent. One school-level characteristic that is frequently used is average daily attendance (ADA). This variable, which is readily measured, appeared in 11 of the 20 studies. Although ADA was often defined differently in the different studies, it is easy to access from school records. ADA is one of the most widely used indicators of school effectiveness.

Performance of School Administrators. Only 6% (N=36) of the variables identified in the 20 studies were aspects of school administrator performance. Of the various subcategories, it was those variables relating to the administrators' perceived roles and responsibilities that were assessed more frequently, although they were still infrequently employed. (See Table 3.) As school systems develop more rigorous personnel evaluation

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Insert Table 3 about here

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systems, the role of administrators' attitudes, beliefs and responsibilities may receive more attention in studies of school effects. Teddlie and Stringfield (1993), Mortimore et al. (1988) and Brookover et al.

(1979), all employed some administrator-related variables. Although the importance of the principal as an instructional leader and generator of school vision and culture has received much attention over the years, most of the 20 studies reviewed failed to assess the principal's contribution in a detailed manner.

Classroom Variables. Twenty-four percent (N=135) of all the objectives identified were measures of classroom process and climate or teacher behaviors and characteristics. (See Table 4). The subcategories of classroom climate and management variables were

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Insert Table 4 about here

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included more frequently than any other type of classroom variable. Another subcategory of variable that appeared in many studies involved the use of assessments and record-keeping practices by teachers. Teacher career development, instructional planning, and instructional goal setting received less attention, but could not be judged as insignificant. Teacher and student interactions, both in terms of management techniques (use of praise and criticism) and questioning techniques (frequency, cognitive level, percent of management vs. substantive) were frequently employed in the school effects literature reviewed. Because measuring classroom variables often requires labor intensive classroom observations, researchers who are committed to including classroom variables must assume additional costs in time and money to gather observation data. These costs may have discouraged more extensive use of classroom process data in school-effects research.

In summary, no single variable or set of teaching behaviors or climate variables received overwhelming attention from researchers. We suspect that many researchers bring a particular set of classroom variables to the research--for example, researchers who value classroom climate may administer a climate questionnaire providing evidence of students' perceptions of the classroom climate. These researchers, however, may be less likely to assess student-teacher interactions or instructional

planning. Thus, there is no single classroom process or climate variable that the research community deems essential when designing studies of school effects. Based on the corpus of studies reviewed, it is crucial to measure a variety of classroom processes--classroom interactions, assessment and record-keeping practices, teacher planning and goal setting, teacher career development opportunities, dimensions of classroom climate, and classroom management techniques.

Curriculum Variables. Four percent (N=25) of the variables identified were curriculum variables. (See Table 5.) The subcategory that received the most attention focused

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Insert Table 5 about here

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on organization of curriculum content. Concerns such as integration across subject areas, use of projects, and number and types of coursework available were included in only three of the twenty studies. Variables associated with student-directed work received attention in only two of the studies.

The low frequency of curriculum-related variables may alter in coming years as educators wrestle with implementing the plethora of new content and opportunity to learn standards being developed by professional education organizations and state departments of education. The use of standard setting as a component of school reform increases the salience of curriculum variables in school effects research. Also, the recognition by educators and psychologists that metacognitive processes can be employed as instructional devices to facilitate school learning and increase self-regulatory processes should focus increased attention on the design and use of student-directed work. The importance of curricular interventions that can be tailored to the individual needs and interests of children and youth holds promise given that today's classrooms are mandated to serve the needs of very diverse students (Wang and Lindvall, 1984).

Student Variables. The category of student variables was the largest category of variables identified. It accounted for 26% (N=147) of the variables reported. (See Table 6.)

Insert Table 6 about here

Among the subcategories of variables, cognitive attainment and ability measures had the highest frequency of usage, followed by student attitude toward school and behavioral indicators. The prevalence of cognitive variables was expected since almost all studies of school effects use student achievement as an outcome measure. In the 20 studies reviewed, reading and mathematics achievement as well as verbal skills were the most commonly measured variables. In terms of student attitude toward schools, the more widely used variables were teacher ratings of student attitudes and student self-report measures, including judgments of school satisfaction and appreciation of school rules. Student self-concept and self-esteem were also commonly used variables. Fewer behavioral variables were identified than either cognitive or affective variables; the most widely used behavioral indicators were drop-out rates and the number and type of courses taken. Although there are unobtrusive measures that could have been employed in studies of school effects, few such measures have been used. For example, measures such as volumes taken out of the school library or participation in science fairs could be identified and used to provide indirect evidence of school effectiveness.

Input-Output Variables. Twenty-four percent (N=137) of the variables reported were in the category of input/output variables. (See Table 7.) Of these variables, approximately 30% were classified in the subcategory of facilities and resources; 12% were within the subcategory of school staff characteristics, training, and experience; 55% were background characteristics of students and families; and 2% were community characteristics.

Insert Table 7 about here

Among the most widely used variables in the subcategory of facilities and resources were pupil/staff ratio, materials and supply expenditures/pupil and median or average teacher salary. The two variables that were most widely used In the subcategory of school staff characteristics, training and experience were average teacher years of experience per school and percentage of teachers at the school with degrees higher than a B.S. The subcategory with the highest variable usage, background characteristics of students and families, contained a number of widely used sociological and demographic variables. These variables included: percentage of graduates entering college; maternal and paternal occupations; average SES of students; median family income; percent/proportion of racial/ethnic groups; and proportion of students with college plans. These variables are representative of the types of indices used in early production function models of social science research. None of the variables identified in the demographic characteristics of community subcategory were frequently used.

Data Sources

Table 8 displays the data sources used in the 20 studies. All but two of the studies employed students as a data source. (See Table 8.) Surprisingly, only nine of the 20 studies actually collected data from teachers and even fewer from school administrators (N=7). Teachers' and school administrators' practices, attitudes, or beliefs were rarely collected. Only three studies collected information from

Insert Table 8 about here

parents, one study collected data from student peer groups and none of the studies surveyed community members. Because many of the school-level characteristics, including student grades, test scores, average

class size and ADA require searching school files, all but one of the studies used archived documents as a source.

Those studies that were based on input-output models (i.e, Burkehead, Fox and Holland, 1967; Guthrie et al., 1971; Katzman, 1968; Kiesling, 1969; Morgan, 1983) relied almost entirely on electronic databases, such as the Project Talent data files, the High School and Beyond Survey, or the EEOS. Typically, these types of studies used student achievement data and selected background information on school-level characteristics, such as ADA, average class size, years of experience and various indices of expenditures for the purposes of data analyses.

Research Methods

Table 9 displays the research methods used in the 20 studies. As anticipated, the use of archived data makes document review the most widely used research method (N=18). (See Table 9.) The use of achievement tests was the second most widely used research

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Insert Table 9 about here

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method (N=16). Interviews (N=10) and questionnaires, surveys, and rating scales (N=10) were equally employed. Student self-reports were employed in nine studies. Self-report measures included self-concept, self-esteem, school satisfaction, classroom climate, and school culture measures that students were asked to complete. Classroom observations were used in only four of the studies. The four studies that employed classroom observations incorporated process-product research methods (i.e., Mortimore et al., 1988; Rutter et al., 1979; Brookover et al., 1979; and Teddlie and Stringfield, 1993) as part of their efforts to accurately estimate school effects. Case studies, performance tests and sociometric devices were used less frequently than other research methods. The rare use of performance tests and other alternative forms of assessments before the late 1980s explains their infrequent use in the 20 studies we

reviewed, a number of which were conducted before the 1980s. The paucity of case studies reflects the lack of emphasis on process-oriented, qualitative research methods that characterized the early years of research on school effects. Currently, quantitative advances in research methods, such as hierarchical linear modeling, are important for the further evolution of the study of school effects. Case studies, also are valued, however, as providing the detailed contextual information that can be used to illuminate why some schools "beat the odds" and their students perform at levels higher than expected. Research studies that include questions concerning the influence of classroom instruction and school and classroom climate on school-level effects require information beyond what is available on existing electronic databases. Detailed classroom data requires the use of interviews, questionnaires, self-reports, and classroom observations.

Types of Outcomes

Table 10 displays the types of outcomes (cognitive, affective, and behavioral) that were used in the twenty studies. (See Table 10.) Ten of the studies were coded as employing at least

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Insert Table 10 about here

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one cognitive, affective and behavioral outcome. Although it is desirable that studies of school effects cover all three domains, the quality and number of the specific variables used determines whether the validity of the study is truly enhanced. For example, in a hypothetical study, variables measured may include ADA as a behavioral outcome, reading achievement as a cognitive outcome and student educational aspirations as an affective outcome. Although all three domains of outcomes are represented, the data are not rich. The validity of the study would be enhanced if multiple measures of each type of outcome were included. Five of the 10 studies that included all three types of outcomes, are similar to the hypothetical example, because the only behavioral outcome measured was ADA. Nineteen of the

twenty studies contained cognitive measures, most were reading and mathematics achievement, a few studies measured course grades and verbal ability. The affective outcome category was covered in 14 of the 20 studies. The most prevalent types of affective outcomes focused on student's self-reports of school satisfaction, occupational aspirations, self-concept, and self-esteem. Some studies included measures of teachers' and school administrators' satisfaction, beliefs, norms, and expectations. In general, however, most of the affective variables were student outcomes.

Number and Direction of Outcomes

Table 11 presents the number and direction of student outcomes for 19 of the 20 studies reviewed. Only Little (1983) did not report student outcomes. It focused on the school as workplace and teachers' and principals' interactions.

Insert Table 11 about here

For each of the remaining 19 studies, all student outcomes were identified and classified as cognitive, affective or behavioral. Each outcome was further classified as to its direction-positive, no difference or negative. Positive cognitive outcomes were those that revealed higher scores on measures of student learning, such as standardized achievement tests or locally developed academic assessments. Negative cognitive outcomes were those that revealed lower scores on these measures. Positive, affective outcomes were those that revealed a healthy, constructive outlook on measures of attitudes, values and beliefs. Examples of affective measures include self-concept, attitudes, values and beliefs. Examples of affective measures include self-concept, attitude toward school, and educational and occupational aspiration scales. Negative affective outcomes were those that revealed lower scores on such measures. Behavioral outcomes were direct measures of students' actions–daily attendance, enrollment in academically rigorous courses, number of suspensions and expulsions, or attendance at a four year

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college. Positive behavioral outcomes are those that revealed evidence of desirable behaviors; a high rate of daily attendance, a low rate of suspensions and expulsions or a large percentage of students enrolling in four-year colleges.

Summing across the 19 studies, 1,724 outcomes were classified. The frequency and percentages of outcomes by type (cognitive, affective, and behavioral) and direction are presented below.

Outcome Type		Number and Direction of Outcomes			
		+	0	-	Total
Cognitive	(N)	390	576	132	1,098
	(%)	35	52	12	63
Affective	(N)	223	229	17	469
	(%)	47	48	3	27
Behavioral	(N)	61	79	17	157
	(%)	38	50	10	9
Total	(N)	674	884	166	1,724
	(%)	39	51	9	100

As expected most of the outcomes reported were cognitive, with about half as many affective outcomes and far fewer behavioral outcomes. This may reflect the accessibility of the data. Most, if not all, school systems collect data on their students' learning. Far fewer school districts collect affective data, suggesting that most of the affective data reported in these studies was collected by researchers at additional expense. The behavioral outcome data are probably a combination of district-collected data, such as daily attendance and more unusual behavioral measures, such as student participation in extracurricular activities, that were collected specifically for the research. The preponderance of attention given to cognitive outcomes, however, is most likely explained by the high value placed on academic outcomes as the primary goal of schooling. High student achievement has long been the hallmark of a school's success. Although student learning has been the focus of the most recent wave of educational

reform (Murphy, 1990), the evidence gathered in this review suggests that student learning has always been regarded as the most crucial outcome in studies of school effects and effectiveness.

In terms of the direction of outcomes, about 50% of the findings do not demonstrate the presence of school effects. Nearly 40% of the outcomes are positive indicating that the school practices and features studied enhanced student performance. Approximately 10% of the findings were negative and demonstrated that school features and practices were related to or produced lower student performance. this overall pattern of results--approximately 50% nonsignificant findings, about 40% positive, and 10% negative outcomes--appears within each type of outcome. Affective outcomes are, however, more evenly divided between positive and nonsignificant results.

A variety of statistical methods were used in these 19 studies. Descriptive, inferential and correlative methods were employed, including t-tests, F-tests, Pearson product moment and rank order correlations, as well as ordinary least squares regressions and hierarchical linear modeling. Many studies also presented descriptive statistics, including averages, standard deviations, frequencies and percentages. One study employed factor analysis as a data reduction technique. Occasionally studies presented findings without determining their statistical significance. In those cases, it was not possible to use some or all of the results in vote counts (See footnotes for Table 11.)

The vote counts presented in this paper should be regarded as a preliminary summary of selected school effects studies. The search strategy used to generate this corpus of studies was designed to gather a range of approaches to the study of school effects in urban settings, not to be exhaustive compilation of all school effects research. These results indicate that school-level variables do produce differences in the cognitive, affective, and behavioral performance of students attending urban schools.

Recommendations

Based on a review of 20 studies of school effects and additional theoretical and methodological papers, the following recommendations for designing studies of school effects in urban settings.

- School-effects studies need to probe contextual differences among : (1) elementary, middle, junior high, and high school organizations; (2) urban, suburban, and rural schools; (3) schools serving populations of students at risk of school failure who are beset by multiple adversities vs. students with one or two risk factors; (4) schools serving high vs. low SES students and families; (5) schools serving students and families whose first language is English vs. students and families who are not native English speakers.

- School-effects studies should have a longitudinal design and collect at least three waves of data to ensure that the estimates of school effects will be stable.

- The design of school-effects studies should be eclectic and incorporate a variety of research approaches, including use both quantitative and qualitative methods. Multivariate, multi-level statistical techniques, case studies, survey methodology and observational techniques can be integrated within a multi-component study of school effects.

- Studies of school effects need to include more variables that explore the influence of features of the curriculum, school organizational and governance structures, policies, instructional processes, and school and classroom climate.

- To identify specific school and classroom level practices that foster school effectiveness, studies of school effects must include data collected from students, teachers, school administrators and parents. Multiple data sources can triangulate study results.

- To better understand the ways in which schools influence the lives of students and their families, school effects studies should include cognitive, affective and behavioral outcomes. Ideally, multiple measures of each should be included in the research design.

- A summary of the number and direction of outcomes demonstrates that school effects do alter the cognitive, affective, and behavioral performances of students. Fifty percent of the outcomes measured reveal nonsignificant results, about 40% reveal positive results and about 10% reveal negative results. This pattern of results describes the distribution of the 1,724 outcomes classified, as well as the distribution of results within each type of outcome. In future research, outcomes should be examined in terms of their educational and statistical significance. Ideally, research designs should be created that permit causal inferences.

- Prior research on school effects has focused almost exclusively on student achievement as measured using standardized, paper-pencil tests. This narrow focus on achievement cannot be equated with school effectiveness per se. Educators and the public expect schools to influence students' values, attitudes, and behaviors, as well as their subject matter competence.

- The effects of school practices and characteristics should be described in terms of their effect on student learning, attitudes, beliefs, values, and behaviors. Future research should examine the impact of school effects on teacher and principal outcomes.

- Based on earlier research, differences among schools on behavioral outcomes will be reasonably stable over 4-6+ years. It is not clear whether a fade-out effect will be present comparable to the effect that has been repeatedly identified in Head Start programs where academic gains fade around third grade. Thus, school effects studies

must be designed longitudinally to guarantee ample opportunity for changes in effectiveness status to occur.

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Table 1

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Table 2

School-Level Organization and Policy Variables Used in Studies of School Effects

Variables	Bluet, Caldiron & Lark (1984)	Brookover et al. (1979)	Burkheard, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Eastvik & Payduk (1978)	Feiler (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Katzman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Facilities and Resources																				
School site size								x	x											
Adequacy of school building and grounds (presence and condition of playground, library, areas for specialists, classrooms)																x				
Availability of resources (library books, art materials, musical instruments, drama facilities, practical math resources, computers, and audiovisual equipment)																x				
Proportion of resources dependent on external funding																				
Presence of preschool																		x		
Presence of day care facility								x												
Age of building			x																	
Number of books in library/student								x							x					
School and Class Size																				
Total number of pupils in school		x	x	x		x		x							x	x				
Registration at beginning of year			x																	
Number of classes in school																x				
Average class size			x						x				x							
12th grade enrollment			x																	
Percent of classes enrollment greater than 35									x											
Schoolwide Policies																				
Curriculum content to be presented																x				x
Parent involvement																x				x
Amount of time devoted to instruction																x				x
Allocation of pupils to classes (ability grouping, mainstreaming)																x				
Discipline																x				
Use of textbooks vs. teacher-developed materials																x				
Use of tests and assessments																x				
Average amount of homework expected																				x

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Table 2

School-Level Organization and Policy Variables Used in Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkheimd, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Poydisk (1978)	Feder (1989)	Fetterchery & Tedlock (1986)	Guthrie et al. (1971)	Kiesman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Research Studies																				
School Governance																				
Presence of school governing body, including parents, teachers, support staff																x				
Support from District Office																				
Provide substitute teachers																x				
Number of visits by district personnel																x				
Amount of district funds																x				
Provision of maintenance services																x				
Provision of psychological and social services																x				
Responsible for reassignment of school personnel																x				
School Characteristics																				
Public vs. private school															x	x		x		
Pupil mobility rates/Percent of transfers								x								x				
Increasing vs. declining enrollment																x				
Frequency of classroom teacher reassignment to different school																x				
Teacher absenteeism rate																x				
Frequency of school administrator reassignment to different school																x				
Positive school climate (safe and orderly)																				x
Continuity of teachers as students progress from grade to grade																x				
Presence of school restructuring (site-based plan)																x				x
Participation in schoolwide evaluation																				x
Emphasis on academic environment																	x			x
Type of school (academic vs. comprehensive)																	x			
Type of school organization (10-12, 9-12 etc.)																x	x			
Number of days in school year								x												
School—average ability														x			x			
Average daily student absenteeism or other measure of ADA		x	x		x	x		x		x	x			x		x	x			

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Table 2

School-Level Organization and Policy Variables Used in Studies of School Effects (cont'd)

Variables	Blust, Caldiron & Lark (1964)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Psychik (1978)	Feder (1989)	Forsterberry & Tedlock (1976)	Gottlieb et al. (1971)	Katzman (1968)	Klasing (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
	Research Studies																			
School Characteristics (cont'd)																				
Degree of parent involvement		x		x			x								x					x
Enrollment in academic courses								x							x					
Number of instances of corporal punishment								x												
Number of days lost to suspensions								x												
Number of expulsions								x												
Number of students repeating grades														x						
Number/percent of transfers								x												
Attrition rate														x						
Norms of teacher collegiality prevail												x								x
Norms of teacher experimentation and innovation prevail												x								x
Conducted a needs assessment to document status of school climate, resources, achievement levels, presence of enrichment activities, and degree of parent involvement																				x

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Table 3

Variables Used to Describe School Administrator Performance in Studies of School Effects

Variables	Research Studies																						
	Bloat, Caldiren & Lark (1984)	Brookover et al. (1979)	Burkehead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Poydak (1978)	Feder (1989)	Fortenberry & Tadlock (1986)	Guthrie et al. (1971)	Kaiseman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)			
General Characteristics																							
Gender																x							
Years of prior experience as classroom teacher																x							
Years of experience as school administrator																x		x					
Highest degree earned																		x					
Administrator's Perceived Roles and Responsibilities																							
Defining school vision with multiple goals												x				x				x			
Curriculum planning and innovation																x							
Staff development and team building, including hiring of teachers												x				x				x			
Developing parent involvement program																x							
Developing community involvement program																x							
Instructional leadership (including frequent classroom observations)												x				x		x		x			
Contact with children (i.e., teaching, lunch duty, playground duty)																x							
Staff evaluation																x				x			
Change agent within school ("bias for action")																x				x			
Facilitating interpersonal relations among staff, pupils, and administrators												x				x							
Assigning students and teachers to classes																		x					
Dividing activities among staff																		x					
Career Development																							
Degree of job satisfaction																x							
Participation in inservice training and upgrading of skills																x							
Administrator's Attitudes and Beliefs																							
Perception of parents' interest in children's school career		x																					
Desire to improve student's intellectual achievements		x																		x			
Perception of school's quality		x																					
Belief that all students can succeed academically		x																		x			
Educational philosophy																		x					

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Table 4

Classroom Variables Used in Studies of School Effects

Variables	Research Studies																						
	Bluet, Calderon & Lark (1984)	Brookover et al. (1979)	Burkehead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Paydek (1978)	Feiler (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaiteman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Murgin (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
General Teacher Characteristics																							
Gender																x							
Age																x							
Years of classroom experience																x							
Number of untenured faculty																x							
Percent of teacher days lost to absenteeism																x							
Number of teachers assigned to special needs such as remediation, art education, ESL classes																x							
Teacher Goals																							
Increase student's intellectual achievements		x											x			x							
Increase student's social skills																x							
Increase student's cultural awareness																x							
Increase student's personal development and character																x							
Teacher Planning																							
Restrictions of students' seating arrangements		x														x							
Classroom layouts (arrangement of student desks; integrating student seating with other classroom functions)																x							
Review student's performance with prior teacher																x							
Use of daily lesson plans																x							
Use of weekly lesson plans																							
Use of time schedule to designate class activities																x							
Amount of weekly preparation time																x							
Percent of teachers who believe the principal will assist them with academic tasks																				x			
Classroom Climate																							
Cohesiveness (students share common goals and values)																							
Low friction																							
Low cliquishness																							

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Table 4

Classroom Variables Used in Studies of School Effects (cont'd)

Variables	Illust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkehead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payduk (1978)	Feiler (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaestman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Manderville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Research Studies																				
Classroom Climate (cont'd)																				
Student satisfaction																		x		
Appropriate task difficulty																				
Student responsibility for classroom/school tasks																		x		
Low apathy (students are interested in classroom work)																				
Low favoritism																				
Formality																				
Goal direction (learning objectives are specific and explicit)																				
Democracy (all students involved in making some classroom decisions)																				
Organization (classroom activities are well planned)																			x	
Diversity (class divides its efforts to achieve several purposes)																				
Resourceful environment																				
Competition (students compete to see who does the best work)																				
Teacher holds high expectations of all students																			x	
Presence of classroom displays of student work																x				
Aesthetic quality of classroom environment																x				
Teacher begins school day punctually													x			x				
Teacher exhibits instructional leadership															x				x	
Amount of time teacher spends interacting directly with students																x			x	
Teacher demonstrates enthusiasm and a positive attitude																x			x	
Amount of time students are on task																x			x	
Teacher expresses interest in students' lives outside the classroom																x				
Teacher closes the school day by reviewing activities or with a special activity																x				
Amount of teachers' workday devoted to instruction		x																x		

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Table 4

Classroom Variables Used in Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkheimer, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Paydek (1978)	Feder (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaiseman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Maeroff (1988)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Research Studies																				
Classroom Management																				
Amount of teacher time devoted to classroom management																x				
Amount of teacher time devoted to giving directions																x				
Amount of student movement permitted during instructional activities		x														x				
Amount of student talk permitted during classroom activities		x														x				
Quality of instruction																	x	x		
Degree of student noise																x				
Amount of teacher movement about classroom																x				
Presence of classroom aides																x				
Amount of time teacher spends monitoring classroom activity													x			x			x	
Number of neutral interactions among teachers and students																x				
Number of positive (praise) interactions among teachers and students																x				
Number of negative (criticism) interactions among teachers and students																				
Amount of time teacher devotes to behavior control																x	x			
Use of praise in front of class to reward good behavior																x	x			
Use of incentives to reward good behavior																x	x			
Sending students to principal or another teacher to reward good behavior																x	x			
Frequency of praise for good work vs. good behavior																x				
Use of verbal reprimands to sanction bad behavior																x				
Denying a student's recess to sanction bad behavior																	x			
Send students to principal to sanction bad behavior																x	x			
Withdraw student privileges to sanction bad behavior																x				
Teacher satisfaction with home-school relations													x			x				

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Table 4

Classroom Variables Used in Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payduk (1978)	Feiler (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaiserman (1968)	Keesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1986)	Teddlie & Stringfield (1993)
	Research Studies																			
Teacher Career Development																				
Participation in district-sponsored inservices																				
Participation in site-based inservices																			x	
Participation in graduate-level courses																				
Participation in formative teacher evaluation												x							x	
Participation in summative teacher evaluation																			x	
Participation in mentoring program																				
Policy of teacher collaboration supported by time, space, supplies and assigned staff												x							x	
Participation in peer coaching program												x								
Opportunities for informed discussions of professional concerns without school personnel												x							x	
Observe other teachers' classrooms												x							x	
Presence of teacher induction process																			x	
Amount of recognition that teachers receive for their efforts																			x	
Use of Assessments and Record Keeping of Student Progress																				
Use of achievement tests in reading	x	x	x		x		x		x	x	x			x	x	x	x	x	x	x
Use of achievement tests in mathematics	x			x	x		x		x		x			x	x	x	x		x	x
Use of record book specifying individual student progress (i.e., books read, projects completed, spelling grades)						x										x				
Use of student portfolios																				
Frequency of use of teacher-made tests																				
Use of state- or district-developed assessments							x													
Use of performance assessments/authentic assessments																x			x	
Student and Teacher Interactions																				
Frequency of questions and statements to increase students' factual knowledge base																x				

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Table 4

Classroom Variables Used in Studies of School Effects (cont'd)

Variables	Research Studies: Blust, Calderon & Lark (1964)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payduk (1978)	Feiler (1989)	Fortenberry & Tadlock (1986)	Guthrie et al. (1971)	Kaiteman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Manderville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Student and Teacher Interactions (cont'd)																				
Frequency of questions and statements to stimulate students' higher-order thinking skills																x				
Frequency of open-ended questions vs. closed questions																x				
Amount of teacher time devoted to task supervision																x				
Percent of time teachers provide neutral, positive, and negative verbal and nonverbal feedback on student work																x				
Percent of time teacher spends marking students' work																x				
Teacher Satisfaction, Attitudes, and Beliefs																				
Teachers believe that all students can succeed		x												x						x
Teachers' expectations that students will attend secondary school		x																		
Teachers' expectations that all students will attend college		x																		
Teachers believe that principals are optimistic about student success		x																		
Teachers believe that their school has a positive climate													x							
Degree of teacher satisfaction		x							x											
Teachers' attitude toward other teachers									x											

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Table 5

Curriculum Variables Used in Studies of School Effects

Variables	Research Studies																					
	Bluck, Caldirou & Lark (1984)	Brookover et al. (1979)	Burkheizer, Fox & Holland (1967)	Coleman & Hoffer (1987)	Dvidoff & Pierson (1991)	Entwisle & Payduk (1978)	Feller (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kalmain (1968)	Keeling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Martin (1988)	Morgan (1985)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)		
Organization of Curriculum Content																						
Degree to which curriculum is divided into separate content area vs. integrated projects																x				x		
Percent of lessons that integrate several subject areas																x						
Degree of curriculum integration between grade levels																x				x		
Number of courses available in English, math, history, science, etc.				x																		
Type of curriculum available (i.e., college prep, vocational, general)															x							
Grouping Practices																						
Percent of time teacher instructs whole class, small groups, or individual students																x						
Use of groups with different purposes (i.e., ability, interests, project-specific)		x														x						
Criteria used to establish membership in groups (i.e., ability, prior achievement, prior experiences)																x						
Use of cooperative learning groups																x						
Student-Directed Work																						
Degree to which students are permitted to manage their work once it is allocated		x														x						
Amount of time students are responsible for planning (a few hours, an entire day, etc.)																x						
The degree of choice students have in selecting the content of work		x														x						
Delivery of Curriculum: Resources Used																						
Use of textbooks, worksheets, and other commercially prepared materials																x						
Use of district-developed materials																						
Use of teacher-developed materials																						

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Table 5

Curriculum Variables Used in Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkheimer, Fox & Holland (1967)	Coleman & Hoffer (1987)	Driscoll & Pierson (1991)	Entwisle & Poydock (1978)	Feder (1969)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaiseman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
	Research Studies																			
Delivery of Curriculum: Resources Used (cont'd)																				
Use of environment beyond classroom (museum, local park, local business) to stimulate project ideas																x				
Use of students' ideas and experiences to stimulate project ideas																x				
Maximum use of available resources																			x	
Use of fiction and nonfiction library books as sources of information and ideas																x			x	
Use of television, movies, and audio programs																x				
Use of computer software																				
Use of games and manipulatives																x				
Professional Standards and Frameworks																				
Use of professionally developed standards for curriculum content (i.e., NCTM Standards)																				
Use of state-developed curriculum frameworks (i.e., the Mathematics Framework for California Public Schools)																				

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Table 6

Student Variables Used in Studies of School Effects

Variables	Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkheimer, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payduk (1978)	Feifer (1989)	Fortenberry & Tadlock (1986)	Guthrie et al. (1971)	Kaiteman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Maudeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Research Studies																				
Cognitive and Ability Measures at Entry to School																				
$\bar{X}$ reading score																x	x	x		
$\bar{X}$ mathematics score																x		x		
Percent of students who demonstrate appropriate use of language in writing																x				
Percent of students who demonstrate a sense of audience in writing																x				
Percent of students who demonstrate a plot in writing																x				
Percent of students with legible writing																x				
Percent of students who use punctuation appropriately																x				
Percent of students who have a sense of other people in their writing																x				
Percent of students with good oral communication skills																x				
$\bar{X}$ word length of writing sample produced																x				
Performance on a behavior scale assesses characteristics such as learning difficulty, anxiety, and aggression																x		x		
Performance on IQ/Aptitude Tests																	x			
Cognitive Attainment and Ability Measures Administered During Students' Schooling																				
Grades in courses or g.p.a.					x	x									x	x				
$\bar{X}$ reading achievement scores	x	x	x		x		x		x	x	x			x	x	x	x	x	x	x
$\bar{X}$ mathematics achievement scores	x			x	x		x		x		x			x	x	x	x	x	x	x
$\bar{X}$ science achievement scores															x	x				
$\bar{X}$ or median verbal skills test	x		x	x		x			x		x				x		x			
Performance on IQ or aptitude test			x			x									x		x	x		
Percent of students who demonstrate appropriate use of language in writing																x				
Percent of students who demonstrate a sense of audience in writing	x																x			
Percent of students who demonstrate a plot in writing																	x			
Percent of students with legible writing																	x			
Percent of students who use punctuation appropriately	x																x			

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Table 6

Student Variables Used in Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkheard, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pearson (1991)	Entwisle & Payduk (1978)	Feder (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Katzman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Cognitive Attainment and Ability Measures Administered During Students' Schooling (cont'd)																				
Percent of students who have a sense of other people in their writing																	x			
$\bar{X}$ word length of writing sample produced																	x			
Performance assessments on real-life mathematics problems											x						x			
Percent of students with good oral communication skills																	x			
Knowledge of law/government	x																			
Knowledge of health practices	x																			
Information usage	x																			
Knowledge of human accomplishments	x																			
Behavioral Indicators During Schooling																				
Percent of students who are rated by teachers as antisocial (i.e., bullying, quarrelsome, aggressive)																	x	x		
Percent of students who are rated by teachers as having learning difficulties																	x			
Percent of students who are rated by teachers as anxious, unhappy, or worried																	x	x		
Self-report of creative activities	x																			
Percent dropout/dropout rate			x	x			x									x				
Average number of science courses taken				x												x				
Average number of mathematics courses taken				x												x				
Average number of history courses taken				x												x				
Average number of language courses taken				x												x				
Average number of hours of homework				x																
Average number of hours of counseling																				
Parents' rating of student achievement					x															
Type of college in which students enroll											x									
Student effort (coming to class prepared)															x					
Average rating of student's reading ability by peers					x															

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Table 6

Student Variables Used in Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1964)	Brookover et al. (1979)	Burkheisel, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Paydak (1978)	Feiler (1969)	Fortenberry & Tallbeck (1986)	Guthrie et al. (1971)	Kaiseman (1965)	Kiesling (1969)	Lee & Marks (1990)	Little (1962)	Manderville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Research Studies																				
Student Attitudes Toward School																				
Percent of students who are rated by teachers as interested in their schoolwork																x				
Percent of students who are rated by teachers as persevering in their schoolwork																x				
Percent of students who are rated by teachers as accepting of discipline in the classroom																x				
Significant others' influence on education															x					
Self-report of students that they like school	x															x				
Percent of students with a positive attitude toward curriculum areas (i.e., mathematics, language arts)																x				
Self-report of societal responsibility	x																			
Appreciatiang human accomplishment	x																			
Student ratings of instructional quality															x					
Student ratings of school discipline															x					
Student ratings of learning freedom															x					
Student ratings of personal safety															x					
Student ratings of job counseling															x					
Student ratings of peer relations															x					
Stability of students' circle of friends																x				
Percent of students with a positive attitude toward selected instructional activities (i.e., painting, reading to self, writing stories)															x					
Percent of students who were comfortable showing work to teachers															x					
Percent of students who were comfortable asking the teacher for help															x					
Percent of students who believed teachers helped students who needed academic help																				x
Percent of students who enjoyed working with peers in their classrooms															x					

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Table 6

Student Variables Used in Studies of School Effects (cont'd)

Variables	Research Studies																							
	Bhust, Caldiron & Lark (1984)	Brookover et al. (1979)	Burkheadt, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payduk (1978)	Feiler (1989)	Furtenberry & Tadlock (1986)	Guthrie et al. (1971)	Kaleman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Student Attitudes Toward School (cont'd)																								
Percent of students who like school rules and conduct themselves appropriately						x									x			x						
Percent of students who are likely to engage in fights and arguments															x									
Appreciation of future education to facilitate career plans		x																						
Appreciation of value of education currently receiving		x																						
Self Concept																								
Students' self-report of interest in schoolwork															x									
Students' self-report of persevering in difficult work															x									
Students' self-report of their ability to concentrate on their work															x									
Student academic self-concept		x			x						x			x										
Students' self-report of their happiness and sense of contentment															x									
Students' self-report of their willingness to work with other students															x									
Students' self-report of internal locus of control											x													
Students' self-report of their comfort in new situations and meeting new people		x													x									
Student self-report of self-esteem	x																							
Student self-report of empathy	x													x										
Career awareness	x																							
Student self-report of teacher's perceptions of them																								
Student self-report of peers perceptions of them																								
Student self-report of positive school climate																								x
Student self-report of teachers' expectations and norms																								x
Student self-report of the school's academic norms																								x

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Table 7

Variables Used in Input/Output Studies of School Effects

Variables	Hust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Poydick (1978)	Feder (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaiseman (1966)	Kiesling (1969)	Lee & Marks (1990)	Link (1982)	Mandeville (1990)	Marsh (1988)	Murgia (1983)	Murnane (1983)	Rutter et al. (1988)	Schweinhart (1984)	Teddlie & Stringfield (1993)
Facilities and Resources																				
Number of school facilities (i.e., auditorium, gymnasium, science lab)																	x			
Value of school buildings/classrooms										x										
Percentage makeshift classrooms								x												
Value of classroom equipment and furniture										x										
Age of textbooks																				
Comprehensiveness of curriculum (including vocational programs)				x												x				
Extra curriculum activities available				x																
Number of special staff/students										x										
Number of special classes for student with special needs																				
Administrator/student ratio										x										
Staff					x				x	x										
Trained teachers/1,000 students		x						x												
Textbook expenditures/pupil			x																	
Materials and supply expenditures/pupil			x	x						x										
Administrative expenses/pupil				x																
Teacher man-years/pupils			x																	
Administrator man-years/pupils			x																	
Other staff man-years/pupils			x																	
Public library available			x																	
Library experience/pupil																				
Amount of aid from state							x													
Median or average teacher salary		x								x						x				
Median or average principal salary			x																	
Median or average superintendent salary										x										
Median or average teacher starting salary			x							x										
Percent of teachers in highest salary quartile																				
Percent of teachers in lowest salary quartile										x										
Supplies and library expenditures				x			x													
Per pupil expenditure																				
Total expenditure/pupil			x																	

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Table 7

Variables Used in Input/Output Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1964)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payrdak (1978)	Feller (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaiseman (1968)	Keeling (1969)	Lee & Marks (1990)	Little (1982)	Maederlie (1990)	Marsh (1988)	Morgan (1985)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Research Studies																				
Facilities and Resources (cont'd)																				
District taxed/total district income																				
State aid/total district income																				
Other aid/total district income																				
Total district income/ADA																				
Instructional expenses/total																				
Accreditation index																				
Teacher turnover			x						x								x			
Number of psychological and social service staff available																				
Number of types and assessments given																				
Presence of tracking																				
Amount of movement among curriculum tracks																				
Schoolboard elected																				
Percent seating capacity utilized																				
Index of cultural advantage									x	x										
School property value/pupil										x										
School district growth rate										x										
School district debt/pupil										x										
Enrollment/teacher			x																	
School Staff Characteristics, Training and Experience																				
Principal graduate of university or teacher's college																				
Principal—years of experience																				
Principal—highest degree earned					x															
Teacher graduate or university or teacher's college		x																		
Median or $\bar{x}$ teacher years of experience per school		x	x					x		x										
Total experience/pupil			x																	
Teacher—highest degree earned																				
Percent of teacher with 5 or more years experience									x											
Teacher's gender																				
Teacher's racial/ethnic background																x				
Teacher's SES level																				
Teachers local residents																				

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Table 7

Variables Used in Input/Output Studies of School Effects (cont'd)

Variables	Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Perason (1991)	Entwisle & Payduk (1978)	Feder (1989)	Fortenberry & Tadlock (1986)	Guthrie et al. (1971)	Katzman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
School Staff Characteristics, Training and Experience (cont'd)																				
Quality of institution teacher attended																				
Teachers' professionalism																				
Number of tenured teachers										x										
Proportion of certified teachers																				
Number of days teacher are absent																				
Teachers "verbal ability"								x												
Percent of teachers in two or more areas																				
Teacher attended NSF institute																				
Teacher attended institutes on students in adverse circumstances																				
Average number of years teachers taught at school		x																		
Percentage teachers with higher degree than B.S.		x	x			x				x						x				
Characteristics of Students and Families																				
Percent graduates entering college			x	x							x			x	x					
College majors students choose				x							x									
Percent of students eligible for free school meal													x							
Maternal and paternal occupations	x							x		x	x				x		x			
Level of parental education (combined)	x										x				x					
Percent of paternal and maternal unemployment																				
Median/mother's level of education					x															
Percent of father's that are high school graduates																				
Level of father's education								x												
Percent of fathers that are employed as professionals																				
Percent of economically disadvantaged students in school																				
Percent of fathers employed as craftsmen					x															
Averages SES level of students		x		x							x			x			x	x	x	
Parents degree of interest in children's education													x					x		
Students have own room, desk, computer																				
Proportion of families owning encyclopedia																				

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Table 7

Variables Used in Input/Output Studies of School Effects (cont'd)

Variables	Research Studies: Blust, Calderon & Lark (1984)	Brookover et al. (1979)	Burkheized, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payrdak (1978)	Feller (1989)	Fortenberry & Tedlock (1986)	Guthrie et al. (1971)	Kaufman (1968)	Kiesling (1969)	Lee & Marks (1990)	Little (1962)	Mandeville (1990)	Marsh (1988)	Morgan (1963)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Characteristics of Students and Families (cont'd)																				
Median family income			x			x					x				x					
Amount of reading material at home																				
Number of possessions in home (education related)											x									
Percent students in juvenile court or have police contact																	x			
Family size/number of siblings															x					
Students stability in post high school graduation job			x																	
Language background in home																		x		
Percent/proportion of each gender in school						x								x						
Percent/proportion of racial/ethnic groups		x		x		x									x		x			
Percent of students who use English as a first language																				
Percent of students who believe they little chance of success in life		x																		
Proportion of students with college plans			x								x			x	x				x	
Proportion of students who have read over 16 books																				
Religious composition				x							x				x					
Percent of students in single-parent families																				
Proportion of students who have attended preschool																x				
Number of months of preschool exposure																x				
Proportion of students who attended kindergarten																x				
Percent of students with learning, sight, or speech impairments																				
Percent of parents who believe children will succeed at school subjects						x							x							
Percent of parent who believe children are well-behaved						x														
Number or percent of parents who want children's education to have an academic emphasis													x							
Number or percent of parents who are satisfied with home-school relations													x							
Number or percent of parents who frequently monitor children's academic progress													x							

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Table 7

Variables Used in Input/Output Studies of School Effects (cont'd)

Variables	Blust, Caldiron & Lark (1984)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Dardoff & Pierson (1991)	Entwisle & Paydak (1978)	Feder (1969)	Fortenberry & Tadlock (1986)	Guthrie et al. (1971)	Kaiman (1968)	Keeling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Demographic Characteristics of Students and Families (cont'd)																				
Number or percent families who receive aid for dependent children (AFDC)							x													
Number or percent of students who take a test to advance to next level of education										x										
Number of students passing test to advance to next level of education										x										
Family commitment to education																				x
Parents' satisfaction with school climate														x						
Continuation rate at next level of schooling																				
Attainment of postgraduate degree										x		x								
Financial sacrifice for childrens' tuition at private schools												x								
Percent of students enrolled in high school																				
Percent of students with serious diseases															x					
Students' occupational aspirations														x						
Number who attain high school degree															x					
One or two years college, no longer enrolled															x					
Demographic Characteristics of Community																				
Rate of community growth in past 10 years																				
Size of community															x					
Region of country																				
Unemployment rate																				
Population of city																				
Median years of schooling for adults in town																				
Percent labor force in manufacturing																				
Percent children in private schools																				
Quality of housing																				
Country of origin																		x		

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Table 8

Data Sources Used in Studies of School Effects

Data Sources	Research Studies																				
	Blust, Caldiron & Lark (1964)	Brookover et al. (1979)	Burkhead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payrdiuk (1978)	Feiler (1989)	Fortenberry and Tedlock (1986)	Guthrie et al. (1971)	Kaufman (1998)	Keeling (1969)	Lee & Marks (1990)	Little (1982)	Mandeville (1990)	Martin (1988)	Morgan (1985)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweitzer (1984)	Teddlie & Stringfield (1993)
Students	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x		x
Teachers		x				x			x				x	x			x	x	x	x
School Administrators		x		x									x				x	x	x	x
Parents						x								x			x			
Student Peers						x														
Community Members																				
Archived Documents	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x

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Table 9

Research Methods Used in Studies of School Effects

Methods	Research Studies																					
	Blust, Caldiron & Lark (1984)	Brookover et al. (1979)	Burkehead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Perrain (1991)	Entwisle & Payduk (1978)	Feller (1989)	Fortenberry & Tadlock (1986)	Guthrie et al. (1971)	Katzman (1968)	Keeling (1969)	Lee & Marks (1990)	Little (1982)	Mandernike (1990)	Marsh (1988)	Morgan (1983)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweinhart (1984)	Teddlie & Stringfield (1993)
Interviews (students, teachers, school administrators)		x	x	x		x			x				x	x	x	x	x	x	x	x	x	x
Questionnaires/Surveys/Rating Scales (Teachers, School Administrators)		x	x			x			x								x	x			x	
Classroom Observations		x																x				
Ability or Aptitude Tests			x			x																
Achievement Tests	x	x		x	x		x		x	x	x	x		x	x	x	x	x	x	x	x	x
Performance Tests																	x					
Student Self-Reports	x	x	x									x		x	x	x	x	x				
Case Studies		x				x																x
Sociometric Instruments						x																
Document Review	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x		x

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Table 10

Cognitive, Affective, and Behavioral Outcomes Measured in Studies of School Effects

Types of Outcomes	Research Studies																				
	Blust, Caldiron & Lark (1984)	Brookover et al. (1979)	Burkehead, Fox & Holland (1967)	Coleman & Hoffer (1987)	Davidoff & Pierson (1991)	Entwisle & Payrduk (1978)	Feller (1989)	Fortenberry & Tadlock (1986)	Guiburn et al. (1971)	Kaiseman (1968)	Kirkling (1969)	Lee & Marks (1990)	Little (1982)	Mackenville (1990)	Marsh (1988)	Morgan (1963)	Mortimore et al. (1988)	Rutter et al. (1979)	Schweinhart (1984)	Teddlie & Stringfield (1993)
Cognitive	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x	x	x	x
Affective	x	x	x			x			x			x	x	x	x	x	x	x	x	x
Behavioral		x	x	x	x	x	x	x		x	x	x		x	x	x	x	x		x

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Table 11

Number and Direction of Student Cognitive, Affective and Behavioral Outcomes

| Student Outcomes | | Research Studies | | |

THE NATIONAL CENTER ON EDUCATION IN THE INNER CITIES

The National Center on Education in the Inner Cities (CEIC) was established on November 1, 1990 by the Temple University Center for Research in Human Development and Education (CRHDE) in collaboration with the University of Illinois at Chicago and the University of Houston. CEIC is guided by a mission to conduct a program of research and development that seeks to improve the capacity for education in the inner cities.

A major premise of the work of CEIC is that the challenges facing today's children, youth, and families stem from a variety of political and health pressures; their solutions are by nature complex and require long-term programs of study that apply knowledge and expertise from many disciplines and professions. While not forgetting for a moment the risks, complexity, and history of the urban plight, CEIC aims to build on the resilience and "positives" of inner-city life in a program of research and development that takes bold steps to address the question, "What conditions are required to cause massive improvements in the learning and achievement of children and youth in this nation's inner cities?" This question provides the framework for the intersection of various CEIC projects/studies into a coherent program of research and development.

Grounded in theory, research, and practical know-how, the interdisciplinary teams of CEIC researchers engage in studies of exemplary practices as well as primary research that includes longitudinal studies and field-based experiments. CEIC is organized into four programs: three research and development programs and a program for dissemination and utilization. The first research and development program focuses on the *family* as an agent in the education process; the second concentrates on the *school* and factors that foster student resilience and learning success; the third addresses the *community* and its relevance to improving educational outcomes in inner cities. The focus of the *dissemination and utilization* program is not only to ensure that CEIC's findings are known, but also to create a crucible in which the Center's work is shaped by feedback from the field to maximize its usefulness in promoting the educational success of inner-city children, youth, and families.

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